Gerhard Aust

Vertical Cooperative Advertising in Supply Chain Management

A Game-Theoretic Analysis

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To my beloved wife
Katja

Foreword

Principally, the main idea of supply chain management is to collaborate with other firms along the supply chain in order to leverage strategic positioning and to improve operating efficiency. One possible facet of this collaboration—especially along a manufacturer-retailer-supply-chain—is cooperative advertising. While the manufacturer's advertising strategy aims to create a brand image and is long-term oriented, the retailer concentrates on short-term oriented advertising by communicating prices and special offers to customers. The problem may occur that a single retailer is not able to bear local advertising expenditures at a height desired by the manufacturer. Therefore, it can absolutely be in the interest of the manufacturer to support the retailer's advertising financially to increase sales by which the manufacturer profits in the end, too. Such a financial participation is called vertical cooperative advertising, a practice that is very common in a lot of manufacturer–retailer partnership programs.

This outstanding thesis is a cumulative dissertation consisting of four main papers. The first paper represents the first comprehensive literature review on cooperative advertising. This review comprises 110 scientific articles and gives an excellent overview of the state of the art in cooperative advertising. Within the other three papers, Gerhard Aust chooses a game-theoretic approach to analyze manufacturer–retailer supply chains which differ according to demand functions, structure, and distribution of power. He formulates comprehensive mathematical models to determine the advertising participation rate, retail and wholesale prices, local and global advertising expenditures, and profits.

The second paper considers a typical cooperative advertising situation with one manufacturer and one retailer. In contrast to previous articles, Gerhard Aust relaxes the restrictive assumption of identical margins for both players and applies a general demand function leading to differentiated results concerning dominant game structures. The third paper regards a supply chain which consists of one manufacturer and two retailers who sell substitutable products. It is the first time that a cooperative advertising program is applied to such a setting. It turns out that retail competition has harmful effects on each players' profit. However, due to reduced retail prices, customers benefit from this additional competition. In the

fourth paper fuzzy set theory is applied for the first time to a single-manufacturer–single-retailer supply chain with cooperative advertising to incorporate uncertainty of demand parameters into analysis.

In summary, this dissertation is distinguished by extremely sophisticated mathematical models, intelligent and clean solutions, and detailed managerial interpretation. Moreover, it contributes significantly to understand and to improve cooperative advertising programs. Therefore, I hope that Gerhard Aust's excellent dissertation finds large distribution.

Prof. Dr. Udo Buscher

Acknowledgments

ups and downs and to talk about sometimes really ivory-tower problems even in late hours, this thesis would not have been possible.

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